Education and More, LLC

WE PROVIDE SOLUTIONS TO EDUCATIONAL PROBLEMS

Lesson 10 – Review

In this problem you will

- Use and assign variables
- Increase/decrease variables
- Create and use functions
- Use Return values
- Use a package
- Use while loops
- Use if/elif/else statements
- Use print statements
- Use int and input functions
- Use randint method
- Understand area of triangle
- Understand defunct triangles
- Use Comparison operators
- Use "or" and "and".
- Use random numbers.
- Use try/except
- Use indentations.
- Use comments

The Problem

Barney Fife is trying to pick up Otis Campbell, the town drunk in Mayberry. Barney somehow always knows where he is. Otis starts at a random position within a square (-20,-20) to (20,20) (1600 km2). Barney also starts at either at a random position or user input. Now, imagine the points where Otis and Barney are standing are the end points of a hypotenuse. Actually 2 right triangles can be drawn and either is correct. I want you to go in the direction where it will make the area of those right triangles the smallest. You are to say which direction you are going and where you and Otis are. At the same time you are moving Otis moves in a random direction (9 different positions (1 stationary)). Make sure you say where he goes. Consider all the different ways that Barney can catch Otis and code your program so Barney can catch Otis.

Items to do

1) Make sure you understand the problem!!!!
2) Get the starting positions
    a. Otis will be random position within (-20,-20), (20,20)
    b. Barney will be input – make sure within (-20,-20), (20,20)
3) Determine the appropriate while loop to continue the game until Otis is caught.
4) Determine the direction to make Barney go
    a. If Otis and Barney are vertical or horizontal to one another then go straight towards Otis
    b. Otherwise determine how to make the area of the right triangle smallest.
5) Make Otis and Barney go
6) Consider special case of meeting each other
7) Determine if they met

Homework for Lesson 10

1) Make sure you understand the logic behind figuring out which direction to go
2) Make sure you understand the logic behind knowing when they will meet
3) Make sure you understand the try and except block
4) While we didn't use continue make sure you understand when to use it.
5) Comment – make_a_move
6) Comment – make_otis_move
7) Around 16 minutes in the video I talked about changing make_otis_move – so it only has 1 return statement. Make that change.
8) Around 19 minutes in the video I talked about how we could make a new function to see if we swapped. Do that and see how it is much better. Hint – we won't need the last 4 lines where we assigned the new variables back into the old variables!
9) Near the end of the video I talked about how Otis went outside the square. Change the code to prevent him from going outside
10) What should you do to TEST it thoroughly. Write up a test plan (telling exactly what needs to be tested and how).
11) Start a new Python file and try to code it again by yourself. Same program. Repetition is great for learning.